

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An endoscope system comprising:

an endoscope having an elongated insertion unit comprising adjoining bending and distal sections; and

a guide member for guiding the insertion unit, the guide member having proximal and distal guide member ends and including

a plurality of tubular members having varying outer diameters, each tubular member of the plurality of tubular members having

proximal and distal ends,

a guide channel of a predetermined inner diameter permitting passage of tubular members having smaller outer diameter and the insertion unit,

a predetermined degree of flexibility,

a predetermined length, and

a direction changing unit operative to change an advancing direction in which tubular members having smaller outer diameter and the insertion unit are advanced through the guide channel, the direction changing unit having an opening for receiving the distal end of the tubular member,

wherein the guide member is adapted to be passed through or placed in a pipe.

2. (Currently Amended) An endoscope system according to claim 1 comprising:

an endoscope having an elongated insertion unit comprising adjoining bending and distal sections; and

a guide member for guiding the insertion unit, the guide member having proximal and distal guide member ends and including a plurality of tubular members having varying outer diameters, each tubular member of the plurality of tubular members having proximal and distal ends, a guide channel of a predetermined inner diameter permitting passage of tubular members having smaller outer diameter and the insertion unit, a predetermined degree of flexibility, a

predetermined length, and a direction changing unit operative to change an advancing direction in which tubular members having smaller outer diameter and the insertion unit are advanced through the guide channel, the guide member is adapted to be passed through or placed in a pipe,

wherein the direction changing unit is a distal cover member attachable to the distal end of the tubular member; the distal cover member having a passing direction changing opening formed in a lateral side of the distal cover member; and the passing direction changing opening changes the passing direction, in which the insertion unit is passed, from an axial direction of the tubular member to a lateral direction thereof.

3. (Withdrawn) An endoscope system according to claim 1, wherein the direction changing unit comprises:

a base member located at the distal end of the tubular member; and
an operation wire having a wire distal end thereof fixed to the base member and a wire proximal end extended towards the proximal guide member end.

4. (Previously Presented) An endoscope system according to claim 2, wherein the distal cover member attached to the distal end of the tubular member and serving as an extremely distal portion of the insertion unit guide member includes a leading direction adjusting unit for adjusting the leading direction in which the insertion unit is led out of the passing direction changing opening.

5. (Previously Presented) An endoscope system according to claim 4, wherein the leading direction adjusting unit comprises:

a raiser located distally to the passing direction changing opening of the distal cover member; and

an operation wire having a wire distal end fixed to the raiser and a wire proximal end extended towards the proximal guide member end.

6. (Withdrawn) An endoscope system according to claim 3, wherein the tubular member comprises a tube and a braid for sheathing a periphery of the tube; and the operation wire being interposed between the tube and the braid and extended towards the proximal guide member end.

7. (Previously Presented) An endoscope system according to claim 5, wherein the tubular member comprises a tube and a braid for sheathing a periphery of the tube; and the operation wire being interposed between the tube and the braid and extended towards the proximal guide member end.

8. (Previously Presented) An endoscope system according to claim 1, wherein when the insertion unit guide member is being formed, the plurality of tubular members being joined are arranged so that

the inner and outer diameters of a tubular member located on the distal guide member end will be smaller than the inner and outer diameters of a tubular member located on the proximal guide member end;

a length of the tubular member located on the distal guide member end are greater than that of the tubular member located on the proximal guide member end; and

the degrees of flexibility of the tubular members are determined so that the tubular member located on the distal guide member end are softer than the tubular member located on the proximal guide member end.

9. (Previously Presented) An endoscope system according to claim 1, wherein the tubular member comprises a tube and a braid that sheathes a periphery of the tube; and a tool tubular member for maintaining a tool the tool tubular member being interposed between the tube and the braid.

10. (Previously Presented) An endoscope system according to claim 1, wherein a balloon that changes from a contracted state to a dilated state or vice versa is located at the

middle of the tubular member; when dilated, the balloon comes into close contact with the wall of the pipe, and the tubular member is locked at a predetermined position in the pipe.

11. (Previously Presented) An endoscope system according to claim 1, wherein the tubular member being passed through the pipe comprises:

- a plurality of juxtaposed tubes; and
- a braid sheathing the juxtaposed tubes.

12. (Previously Presented) An endoscope system according to claim 1, further comprising:

- a drum, the insertion unit is wound about the drum, the drum having a controller, the controller controlling the bending section incorporated in a center; and
- a support for enabling the drum to freely rotate.

13. (Currently Amended) An endoscope system according to claim 1 comprising:
an endoscope having an elongated insertion unit comprising adjoining bending and distal sections; and

a guide member for guiding the insertion unit, the guide member having proximal and distal guide member ends and including a plurality of tubular members having varying outer diameters, each tubular member of the plurality of tubular members having proximal and distal ends, a guide channel of a predetermined inner diameter permitting passage of tubular members having smaller outer diameter and the insertion unit, a predetermined degree of flexibility, a predetermined length, and a direction changing unit operative to change an advancing direction in which tubular members having smaller outer diameter and the insertion unit are advanced through the guide channel, the guide member is adapted to be passed through or placed in a pipe,

wherein an observational optical system and an illumination optical system are incorporated in the distal section of the insertion unit,

a flexible tube adjoins the bending section, the flexible tube including a metallic braid and a tube body integrated thereinto, and having a smaller outer diameter than the bending section; and

a guide tube having a metallic braid and a tube body integrated thereinto and having an

outer diameter that is substantially identical to an outer diameter of the bending section mounted on a periphery of the flexible tube included in the insertion unit so that the guide tube can slide freely.

14. (Original) An endoscope system according to claim 13, wherein the insertion unit includes an attaching/detaching means for attaching the flexible tube to the guide tube so that the flexible tube can be freely detached from the guide tube.

15. (Previously Presented) An endoscope system according to claim 14, wherein the attaching/detaching means is an elastic member that comes into close contact with an external surface of a base, which joins the bending section and the flexible tube, with a predetermined holding force.

16. (Previously Presented) An endoscope system according to claim 13, wherein a plurality of bosses having distal portions shaped substantially like a sphere is formed on an external surface of the tube body included in each guide tube and flexible tube.

17. (Withdrawn) An endoscope system comprising:

an endoscope having an insertion unit that is elongated and that includes a distal section in which an observational optical system and an illumination optical system are incorporated, a bending section that adjoins the distal section, and a flexible tube that adjoins the bending section, that has a metallic braid and a tube body integrated therewith, and that has a smaller outer diameter than the bending section does; and

a guide tube being mounted on the periphery of the flexible tube so that it can slide freely, having a metallic braid and a tube body integrated therewith, and having substantially the same outer diameter as the bending section does.

18. (Withdrawn) An endoscope system according to claim 17, wherein the insertion

unit includes an attaching/detaching means for attaching the flexible tube to the guide tube so that the flexible tube can be freely detached from the guide tube.

19. (Withdrawn) An endoscope system according to claim 18, wherein the attaching/detaching means is an elastic member that comes into close contact with the external surface of a base, which joins the bending section and the flexible tube, with predetermined holding force.

20. (Withdrawn) An endoscope system according to claim 17, wherein a plurality of bosses whose distal portions are shaped substantially like a sphere is formed on the external surface of the tube body included in each of the guide tube and flexible tube.

21. (Withdrawn) An endoscope system according to claim 17, wherein when each of the guide tube and flexible tube is formed with a plurality of tubes, adjoining ones of the tubes are joined using a pipe fitting in order to attain a predetermined length.

22. (Withdrawn) An endoscope system according to claim 17, wherein: when the guide tube is formed with a plurality of tubes having different diameters so that it will have a predetermined length, the ends of the tubes having different diameters are layered and joined so that the diameter of the guide tube will diminish from the proximal end thereof to the distal end thereof.

23. (Withdrawn) An endoscope system according to claim 17, wherein: when the guide tube is formed with a plurality of tubes having different diameters and different lengths so that it will have a predetermined length, the proximal ends of the tubes are located at the same position so that the diameter of the guide tube will diminish from the proximal end thereof to the distal end thereof.

24. (Withdrawn) An endoscope system according to claim 17, wherein:

the insertion unit comprises a soft bending section, a braid tube that is harder than the bending section to a predetermined extent, and a coiled tube that is harder than the braid tube to a predetermined extent; and

the bending section, braid tube, and coiled tube are joined in that order from the distal end of the insertion unit.

25. (Withdrawn) An endoscope system according to claim 17, wherein the bending section is formed with a fluid pressure actuator.

26. (Withdrawn) An endoscope system according to claim 25, wherein:

when fluid compartments formed in a multi-lumen tube included in the fluid pressure actuator are connected to insertion unit-side tubes with stepped communication members between them, a stepwise portion is formed at the end of the multi-lumen tube in order to prevent interference among the stepped communication members that communicate with the fluid compartments.

27. (Withdrawn) An endoscope system according to claim 25, wherein:

when the insertion unit-side tubes are connected to the fluid compartments formed in the multi-lumen tube included in the fluid pressure actuator, the ends of the insertion unit-side tubes to be inserted into the fluid compartments are tapered.

28. (Withdrawn) An endoscope system according to claim 25, further comprising:

a drum about which the insertion unit of the endoscope is wound, and which has a fluid pressure source that supplies a fluid to the fluid pressure actuator, and a supply-of-fluid control unit, which controls the supply of fluid from the fluid pressure source, incorporated substantially in the center thereof; and a support for holding the drum so that the drum can rotate freely.